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AUTHOR Wagner, Mary
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ABSTRACT

The report of the National Longitudinal Transition Study presents initial findings on the educational and employment experiences since 1985-86 of more than 8,000 youth (ages 13 to 23) with disabilities. The report addresses two questions: How are youth with disabilities doing in their transition to adulthood? and What factors appear to have helped or hindered them in making a successful transition? Among findings on the secondary school stage of transition are that 56% of special education exiters left secondary school by graduating; that 8% of special education exiters left school because they exceeded the school age limit; and that the dropout rate for youth with emotional disturbances was almost 55%. Findings for the postsecondary transition stage indicated that fewer than 15% of special education exiters had participated in postsecondary education the previous year; and that less than half of the out-of-school youth had found either part or fulltime paid employment. Factors related to school failure or dropping out included age (younger students were more likely to fail), male sex, minority status, an identified emotional disturbance, poor social integration, previous disciplinary problems, and frequent school absences. Extensive tables provide detailed statistical data. An appendix gives an overview of the study as well as definitions of independent variables used in the multivariate analyses. (DB)

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National Transition Study

THE TRANSITION EXPERIENCES OF YOUTH WITH DISABILITIES: A REPORT FROM THE NATIONAL LONGITUDINAL TRANSITION STUDY

March 1989

Mary Wagner, Ph.D., Director
The National Longitudinal Transition Study
of Special Education Students
SRI International

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SRI International®
333 Ravenswood Ave. • Menlo Park, CA 94025
415 326-6200 • TWX: 910-373-2046 • Telex: 334-486

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THE TRANSITION EXPERIENCES OF YOUTH WITH DISABILITIES: A REPORT FROM THE NATIONAL LONGITUDINAL TRANSITION STUDY

In the early 1980s, the special education community witnessed the maturing of a law. As the Education of the Handicapped Act (EHA) reached the end of its first decade of implementation, we saw systems in place that had achieved a significant increase in access to a free, appropriate public education for children with disabilities. Some children had grown up under EHA and were completing their secondary school careers and moving out into the adult world. As this first generation of special education students reached their transition years, disturbing news reached us about their transition to adult life. Studies in some states and communities suggested that special education exiters were having difficulty finding or keeping employment, were not well integrated into social or community networks, and were not gaining increasing independence, as they and their families had hoped they would (Mithaug & Horiuchi, 1983; Edgar, Levine & Maddox, 1986; Hasazi, Gordon, & Roe, 1985).

Were these problems indicative of a national problem? Was the source of the problem youths' preparation in secondary school for the demands of transition to the out-of-school years? Did transition difficulties affect youth with all kinds of disabilities? Partially in response to the absence of answers to such questions, in 1983, Congress mandated that the Department of Education commission a 5-year longitudinal study to provide comprehensive information about what happens to youth with disabilities nationally in terms of education, employment, and independent living while they are in secondary school and in the first few years afterward.

The Office of Special Education Programs (OSEP) of the U.S. Department of Education contracted with SRI International to develop a study design and student sample; in 1987, under a second contract, SRI began the National Longitudinal Transition Study (NLTS). The study is providing the first information available nationally about disabled youths' secondary school

programs, additional services, social integration, educational achievements in secondary school and in postsecondary education, and employment experiences. (A further description of the NLTS is contained in the appendix.)

For the past 2 years, SRI has been collecting data about more than 8,000 youth who were ages 13 to 23 and in special education programs in the 1985-86 school year. Telephone interviews with parents of these youth, a survey of educators in the schools they attended, and information drawn from their school records have produced a database that will help the special education community understand the transition experiences of youth with disabilities, their educational programs and services, and the links between programs and transition outcomes.

This paper presents a broad overview of the findings emerging from analyses of the NLTS database. We address two main questions:

- How are youth with disabilities doing in their transition to adulthood?
- What factors appear to have helped or hindered them in making a successful transition?

The next two sections of the paper address answers to these questions. The paper concludes with a discussion of additional issues that will be the focus of later stages of the National Longitudinal Transition Study analyses.

How Are Youth With Disabilities Doing In Their Transition to Adulthood?

The transition process spans several years of adolescence and early adulthood, encompassing experiences both in secondary school and in the first years afterward. An answer to the question, "how are youth doing?" has a different focus at the secondary school stage than it has for youth in the out-of-school stage. At the secondary school stage, we focus on two measures. First, we consider school achievement by examining the extent to which students who were in graded programs received failing grades in

school. Our second focus at the secondary school stage is school completion--the extent to which youth completed school by graduating, dropping out, or aging out. At the later stage in transition, when youth are no longer in secondary school, we answer the question of how they are doing by examining their participation in postsecondary education or training, the extent to which they achieved paid employment, and the extent to which they had engaged in any productive activities during the previous year (defined in a later section). Findings regarding transition outcomes at the secondary school and out-of-school stages are described below.

Transition: The Secondary School Stage

Secondary school experiences are often structured to provide opportunities for students to learn skills in the social, vocational, and academic domains. Here, we focus on the academic domain and examine school achievement for youth with disabilities.

The concept of academic achievement is complex and has been measured and analyzed in numerous ways in the research literature. Standardized test scores, grade point averages, credits earned, and promotion rates have all been used to assess academic achievement. Here, we discuss only one aspect of academic achievement: the extent to which school records of youth in graded programs indicated they received one or more failing grades during their most recent year in secondary school. Although this measure does not distinguish variations in achievement among youth who were succeeding in school, it does distinguish generally youth who were "making it" from those who were not succeeding in their secondary school careers.

Table 1 indicates, for youth in each disability category, the percentage of youth who were reported by their schools to have received a failing grade in any class in their most recent year in secondary school. Almost 1 in 3 youth with disabilities (31%) who were in graded programs received at least

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* Percentages in Tables 1 through 5 are weighted to represent youth in each primary disability category and age group (see appendix). Sample sizes are unweighted. Primary disability category is based on reports from schools or school districts.

Table 1: RECEIPT OF FAILING GRADES BY SECONDARY STUDENTS WITH DISABILITIES

Disability Category	% of Students Receiving 1 Or More Failing Grades in Most Recent School Year	Sample Size
All conditions	31.3	5683
Learning disabled	34.8	812
Emotionally disturbed	44.6	506
Mentally retarded	21.8	864
Speech impaired	35.0	366
Visually impaired	17.1	567
Deaf	8.1	688
Hard of hearing	21.2	518
Orthopedically impaired	15.2	473
Other health impaired	25.8	287
Multiply handicapped	6.5	531
Deaf/blind	4.0	71

Using a 2-tailed test with 95% confidence, the confidence interval for all conditions is $\pm$1%. For disability categories, the confidence intervals range from $\pm$2% to $\pm$5%.

Source: Students' school records.

one failing grade in their most recent school year. Youth with emotional disturbances were significantly more likely than youth in any other disability category to have received a failing grade (45%; $p \leq .01$). Receiving a failing grade was also relatively more common for youth with learning disabilities (35%) and speech impairments (35%) than for youth in other categories. About 1 in 5 youth who were in the mentally retarded or hard of hearing categories received a failing grade. These findings indicate that, despite the special education and support services provided to youth with disabilities, many were still finding it difficult to succeed in school.

School completion is our next measure of how youth are doing during the secondary school stage of transition. As part of the school reform movement at the secondary level, considerable alarm has been expressed, both in the schools and in the public policy arena, about the proportion of students who leave school without graduating, and much attention is being paid to dropout prevention as a way to increase the percentage of youth who finish high school. Table 2 indicates the percentage of secondary school special education exiters in a 2-year period who left school by graduating, dropping out, or exceeding the age limit for school attendance (i.e., "aging out").

Table 2: SECONDARY SCHOOL COMPLETION STATUS
OF SPECIAL EDUCATION EXITERS IN TWO YEARS

Disability Category	Percentage of Exiters in 2 Years Who: Graduated	Dropped Out	Aged Out	Sample Size
All conditions	56.2	36.4	7.5	3045
Learning disabled	61.0	36.1	2.9	533
Emotionally disturbed	41.8	54.7	3.6	334
Mentally retarded	49.9	33.6	16.5	459
Speech impaired	62.7	32.5	4.8	222
Visually impaired	69.5	16.8	13.7	279
Deaf	71.8	11.8	16.4	354
Hard of hearing	72.3	15.5	12.2	249
Orthopedically impaired	76.5	15.6	7.9	246
Other health impaired	65.4	25.9	8.7	142
Multiply handicapped	32.2	17.6	50.2	182
Deaf/blind	43.1	7.8	49.2	45

Using a 2-tailed test with 95% confidence, the confidence interval for all conditions are ±1%. Sampling errors for disability categories generally range from ±1% to ± 4%. For the deaf/blind category, sampling errors are ±7% because of the small sample size.

Source: Students' school records and/or parent reports.

Overall, 56% of special education exiters in the 1985-86 and 1986-87 school years left secondary school by graduating. This figure is significantly lower than the graduation rate for students as a whole. For example, the U.S. Department of Education "Wallchart" estimates the graduation rate for all students to be 71%, a rate similar to the 75% rate reported by the U.S. Bureau of the Census and the U.S. Center for Education Statistics (CES, 1986a; figures are for 1985). Differences are even more pronounced for youth in some disability groups. Although the graduation rates for youth with orthopedic, visual, or hearing impairments approach the rate for non-disabled students, the graduation rates for youth with emotional disturbances, mental retardation, or multiple handicaps are below 50% ($p \leq .01$).

Table 2 further demonstrates that overall, about 8% of special education exiters left school because they exceeded the school age limit. Youth with multiple handicaps, including those who were deaf and blind, were most likely to age out of school (50%); about 16% of deaf and mentally retarded youth aged out, and fewer than 5% of youth with learning, speech, or emotional impairments aged out ($p \leq .01$).

More than 1 in 3 exiters from the secondary special education system dropped out of school (36%), compared to about 25% for nondisabled students. The dropout rate for youth with emotional disturbances is almost 55%, compared to significantly lower rates for youth with sensory or orthopedic impairments (between 12% and 17%; $p \leq .01$). Youth with learning disabilities, who are the majority of secondary special education students, had a dropout rate of 36%.

Earlier research on dropouts from special education in single states or small samples of districts reports dropout rates in a similar range. For example, studies have reported dropout rates that range from 31% for mildly impaired youth in several districts in Florida (Fardig, et al., 1985) and 34% in Vermont (Hasazi, Gordon, & Roe, 1985), to 40% for special education students overall in New Hampshire (Lichtenstein, 1988). In urban districts, the rates appear to be higher. Prior research has reported dropout rates for youth with learning disabilities in urban areas that are as high as 42% (Cobb & Crump, 1984), 47% (Levin, Zigmond, & Birch, 1985), 50% (Edgar, 1987), and 53% (Zigmond & Thornton, 1985). These several studies show a consistent pattern of dropout rates for youth with disabilities that are higher than those for nondisabled youth; many youth with disabilities apparently do not believe they can meet the requirements to graduate, do not want to stay in school in order to meet those requirements, or are not encouraged by their schools to do so.

Transition: The Out-of-School Stage

Two paths common to youth in the early years out of secondary school involve pursuing additional postsecondary education or training, or finding employment.

Furthering one's education or training after high school is a common way for youth to increase their skills, employability, and eventual earnings. However, fewer than 15% of special education exiters who were out of school more than 1 year were reported by their parents to have participated in post-secondary education or training in the previous year, as shown in Table 3. We have found no significant difference in participation between youth out of

Table 3: POSTSECONDARY EDUCATION PARTICIPATION OF SPECIAL EDUCATION EXITERS

Disability Category	% of 1985-86 Exiters Taking Courses From: Any Postsecondary Institution	Vocational or Trade School	2-Year College	4-Year College	Sample Size
All conditions	14.6	8.1	5.9	2.1	1265
Learning disabled	16.7	9.6	6.9	1.8	245
Emotionally disturbed	11.7	8.8	4.1	1.3	131
Mentally retarded	5.8	4.3	1.2	.6	164
Speech impaired	29.3	7.0	19.3	8.3	83
Visually impaired	42.1	2.9	15.2	27.5	110
Deaf	38.5	7.0	19.0	15.2	154
Hard of hearing	30.1	11.6	12.7	7.0	101
Orthopedically impaired	28.0	9.0	10.4	9.5	108
Health impaired	30.7	13.2	12.1	7.6	65
Multiply handicapped	3.8	.9	4.0	.2	77
Deaf/blind	8.3	8.8	0.0	0.0	27

Sampling errors for all conditions are $\leq \pm 1\%$. For disability categories, sampling errors range from $\pm 1\%$ to $\pm$ 5%.

Source: Parent reports.

school less than 1 year and those out of school longer. Vocational or trade schools were the most commonly attended postsecondary institutions, with 8% of exiters reportedly enrolled in the year before data collection Almost 6% attended a 2-year or community college, and only 2% attended a 4-year college or university.

These figures are significantly below the postsecondary education participation rates for nondisabled youth. Two years after leaving high school, 56% of the sophomore cohort of the High School and Beyond study (Jones, et al., 1986) were involved in postsecondary education or training. The institutions most commonly attended by nondisabled students were 4-year colleges (28%) and 2-year colleges (18%). Only for vocational or trade schools does the rate of participation by youth with disabilities approach the rate of other students (10%).

An alternative path for out-of-school youth, paid employment, is a major vehicle for achieving economic self-sufficiency and is a desirable eventual outcome for youth, whether or not they have a disability. NLTS data reveal that fewer than half of youth with disabilities who had been out of secondary

school less than 1 year were reported by parents to have found paid jobs. Overall, 23% of youth with disabilities who had been out of school less than 1 year worked part time for pay and 22% worked full time.

Employment rates were not significantly different for youth who had been out of secondary school more than 1 year; 17% had part-time paid jobs and 29% worked full time for pay, as shown in Table 4. Rates of being employed vary widely by disability category; for example, 57% of youth with learning disabilities were employed, compared to 31% of youth with mental retardation and 14% of youth with orthopedic impairments.

NLTS findings that only about half of youth out of secondary school more than 1 year were working for pay is similar to an employment rate of 50% reported in a study of special education exiters in Washington (Gill, 1984) and to rates approaching 60% in studies in Colorado and in Washington (Mithaug & Horiuchi, 1983; Edgar, Levine & Maddox, 1986). The NLTS rate of full-time employment (29%) is also similar to rates in studies of special education exiters in Colorado (32%; Mithaug & Horiuchi, 1983), and marginally lower than reported by studies in Vermont (37%; Hasazi, Gordon, & Roe, 1985) and Virginia (42%; Wehman, Kregel, & Seyfarth, 1985).

Table 4: EMPLOYMENT CHARACTERISTICS OF YOUTH WITH DISABILITIES OUT OF SECONDARY SCHOOL MORE THAN 1 YEAR

Disability Category	% Working for Pay: Part Time	% Working for Pay: Full Time	Average Hourly Wage	Sample Size
All conditions	17.2	29.2	$4.35	1326
Learning disabled	19.3	37.9	4.63	249
Emotionally disturbed	21.5	18.5	3.94	136
Mentally retarded	11.6	19.8	3.68	174
Speech impaired	21.2	28.8	4.09	86
Visually impaired	14.3	10.0	3.12	112
Deaf	14.7	23.6	4.08	156
Hard of hearing	22.6	22.9	4.08	100
Orthopedically impaired	12.6	1.3	3.30	114
Other health impaired	14.9	13.9	3.54	65
Multiply handicapped	4.4	1.3	3.39	104
Deaf/blind	9.5	0.0	--	30

Using a 2-tailed test with 95% confidence, the confidence interval for all conditions is ±1%. For disability categories, the confidence intervals range from ±1% to ±5%.

Source: Parent reports.

Employment levels for youth with disabilities nationally are markedly below employment rates for nondisabled youth. In the general population of youth 16 to 21 years of age and not in secondary school, 62% were employed for pay (Borus, 1984), compared to 50% of youth with disabilities. Only among youth with learning disabilities does the employment rate (58% employed for pay) approach the level for nondisabled youth. Even when youth with disabilities are compared only to noncollege youth without disabilities, special education exiters had lower rates of employment. About 49% of non-college high school graduates were working full-time 1 to 2 years after high school, compared to 36% of special education graduates more than 1 year out of high school (William T. Grant Foundation, 1988).

Table 4 also reveals that the average wage for youth who had been out of school more than 1 year was $4.35. About 12% of youth with disabilities earned less than $3.00 per hour more than 1 year after leaving high school, and about 21% earned more than $5.00 per hour. These wage levels nationally in 1987 are very similar to wages reported in Vermont for 1984; then, 75% of special education exiters in Vermont earned less than $5.00 per hour (Hasazi, Gordon, & Roe, 1985), compared to an NLTS rate of 79% for disabled youth nationally in 1987.

There was only about a $1.00 per hour difference in average hourly wage between youth in different disability categories. For example, youth with learning disabilities averaged $4.63 per hour after 1 year out of high school, compared to $3.68 for youth with mental retardation and $3.39 for those with multiple impairments.

Although employment and/or postsecondary education and training are among the most common paths for youth no longer in secondary school, other pursuits also constitute productive activities for these youth. Some engage in volunteer activities, others concentrate on marriage and/or child raising commitments, still others are involved in job training programs not involving postsecondary educational institutions. To look more broadly at how youth are doing when they leave school, we have examined the extent to which they engaged in any of several productive post-high school activities. In this analysis, noninstitutionalized youth who were out of secondary school more

than 1 year were considered to have been engaged in productive activity during the previous year if they:

- Took courses from any postsecondary educational institution (trade or vocational school or 2-year or 4-year college).
- Were working for pay, either competitively or in a sheltered environment.
- Were engaged in a volunteer job or unpaid work.
- Received job skills training from a source other than a family member.
- Were female and married or reported to be involved in child- raising.

Table 5 indicates that 69% of noninstitutionalized youth with disabilities who were out of secondary school more than 1 year had been engaged in productive activity during the previous year, as defined above. Even among youth with learning, speech, or hearing impairments, only between 81% and 84% of youth had been engaged in productive activity in the previous year. Among those with visual impairments, 3 of 4 were engaged in the activities listed above. The rate of engagement drops below 50% for youth with mental retardation or multiple handicaps.

Table 5: PERCENTAGE OF NONINSTITUTIONALIZED YOUTH OUT OF SECONDARY SCHOOL MORE THAN 1 YEAR WHO ENGAGED IN PRODUCTIVE ACTIVITY IN THE PREVIOUS YEAR

Disability Category	% of Youth Out of School >1 Year Engaged in Productive Activity in the Past Year	Sample Size
All conditions	69.4	797
Learning disabled	81.0	108
Emotionally disturbed	63.4	78
Mentally retarded	47.8	92
Speech impaired	81.4	53
Visually impaired	75.5	83
Deaf	84.3	116
Hard of hearing	81.2	68
Orthopedically impaired	59.4	89
Health impaired	72.1	50
Multiply handicapped	41.4	42
Deaf/blind	32.7	18

Using a 2-tailed test with 95% confidence, the confidence interval for all conditions is ±2%. For most disability categories, the confidence intervals range from ±2% to ±6%.

Source: Parent reports.

Experience demonstrates that having a disability limits many youth in pursuing particular activities; having mental retardation, for example, clearly presents obstacles to college attendance. However, the range of activities considered as productive transition experiences provides opportunities to the vast majority of youth with disabilities. Recent research contends that even youth with severe handicaps can usefully be involved in vocational programs and supervised employment, for example (Wehman and Hill, 1981; Brown, et al., 1983). However, from the figures in Table 5, we can conclude that there were many youth with all types and levels of disability, who were not engaged in productive experiences out of high school.

The findings presented here are a mixed bag, with both good news and bad news regarding the transition outcomes of youth with disabilities. Whether the glass seems half empty or half full depends largely on the expectations we hold for these youth. If the basis of comparison is nondisabled youth, many youth with disabilities are clearly not faring well. Youth in many categories of disability were significantly less likely than nondisabled youth to graduate from high school, get any postsecondary education, find employment or become engaged in any productive activity after high school. Yet, are the outcomes of nondisabled youth the appropriate comparison? For many categories of disability, the fact that even a small percentage of youth achieved employment is a triumph for them, their families, the educators that served them, and the public policy that mandated and supported their education. The transition outcomes documented here involve many success stories. However, when fewer than 70% of youth with disabilities who had been out of high school more than 1 year were engaged in any productive activity in that year, the findings reported here also contain stories of wasted potential, of youth not having or not taking advantage of opportunities for productive contributions to society.

What Factors Help or Hinder Youth with Disabilities In Making an Effective Transition?

How do we intervene in the transition process to improve the prospects for youth with disabilities? A first step in answering that question is to understand what kinds of students are making successful transitions. What

factors distinguish youth who succeeded in school, found employment, or received postsecondary training from youth who did not? Only when we understand the nature of the students involved in successful versus unsuccessful transitions can we go on to identify or develop programs that may improve their transition experiences.

Analysis Procedures

To identify characteristics of youth that are associated with successful vs. unsuccessful transitions, we have performed multivariate analyses of each of the outcomes discussed. Each outcome is measured by a dichotomous variable, with youth receiving a value of 1 if they achieved the outcome (i.e., received a failing grade, dropped out of school, participated in postsecondary education, had a paid job) and 0 if they had not. Logistic regression analyses were performed using these dichotomous measures as dependent variables.

Because school achievement and transition outcomes vary so much based on the disability of the youth, as the descriptive analyses have demonstrated, multivariate analyses for most dependent variables are reported separately for youth in 5 major disability groupings. Analyses are reported for these larger groups, rather than for each of the 11 individual disability categories, because the sample size for many categories is too small for the complex explanatory models developed. The sample size in the analysis of youth engaged in any productive activities is too small for separate analyses of individual groups, so youth are combined in a single model, with variables distinguishing the group to which they belong.

Groups are formed to maximize the homogeneity of disabilities and experiences of youth within the groups. Group 1 includes youth that have learning disabilities, emotional disturbances, or speech impairments (referred to as LESI), who are not institutionalized and not also mentally retarded. Group 2 includes youth with mild or moderate mental retardation (MR) who may or may not have other impairments. Group 3 involves youth with health or orthopedic impairments who are not also mentally retarded (referred to as physically impaired). Group 4 includes youth who are deaf or hard of hearing and not also

mentally retarded. Group 5 is youth who are visually impaired and not also mentally retarded. Severely impaired youth are not included in the analyses because they do not tend to vary significantly on the dependent variables.

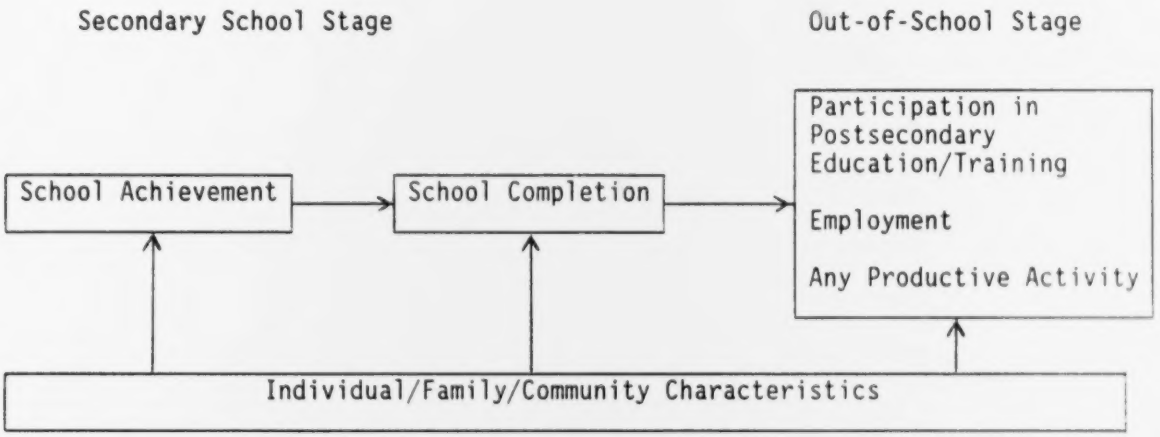
Logistic regression results are unweighted, unlike the descriptive findings reported in the paper thus far. Sampling weights are based on the primary disability category of the youth and enhance the generalizability of descriptive findings (see appendix). However, when youth from different disability categories are combined into larger groupings for the multivariate analyses, youth with vastly different weights are combined. Results are skewed and generalizable primarily to youth with larger weights. For example, in the LESI group, youth with learning disabilities have much larger weights than youth with speech impairments or emotional disturbances because youth with learning disabilities comprise about half of special education students at the secondary level. Weighted analyses of the LESI group, therefore, would be dominated by youth from the LD category and would not illuminate factors affecting the outcomes of youth with speech impairments or emotional disturbances. Unweighted analyses better represent the mixture of disability types within the disability groups.

Tables 6 through 10 present the findings of the multivariate analyses of each transition outcome. The definition of each variable presented in the tables is specified in the appendix.

Links Between Secondary School and Out-of-School Transition Outcomes

Understanding what kinds of youth have successful versus unsuccessful transition experiences first entails recognizing the interrelationships among the outcomes we have discussed. Figure 1 graphically depicts the relationships among outcomes in the transition process that our analyses suggest. National Transition Study analyses demonstrate that that achievements in the out-of-school stage of transition are strongly influenced by how well youth do in school, controlling for the individual, family, and community characteristics that influence the outcomes of youth at each stage in the transition process.

Figure 1: HYPOTHESIZED RELATIONSHIPS AMONG OUTCOMES IN THE TRANSITION PROCESS



Looking first at the beginning of the transition process, we see a strong relationship between school achievement and school completion (see Table 7). Youth who received failing grades in school were significantly more likely to drop out of school than youth who were not failing ($p \leq .001$). This relationship holds true regardless of the handicapping condition of the student, his ethnicity, family background, or other characteristics. This finding is consistent with parents' reports of the reasons youth drop out of school; doing poorly in school and not liking school are the two most commonly reported reasons for dropping out.

Continuing through the transition process, completing high school by graduating has a strong positive effect on participating in postsecondary education and training ($p \leq .05$ and .01; Table 8). High school graduates, by participating more often in further education and training, have an increased potential for the improved skills and employability that generally accompany it. Graduating from high school also has a positive, though less strong, effect on current employment for some youth ($p \leq .05$ and .01; Table 9). Further its effect seems to increase for youth in some disability groups the longer they are out of school. Finally, high school graduates were significantly more likely than dropouts to be engaged in productive activities in general more than 1 year after leaving school ($p < .001$; Table 10).

These findings demonstrate that having positive experiences in secondary school, in terms of academic achievement and school completion, puts youth with disabilities on a positive trajectory into the out-of-school stage of their transition to adulthood. Receiving failing grades in school, with the increased likelihood of dropping out that accompanies it, puts youth with disabilities at risk of poor transition experiences after leaving school.

We can conclude, therefore, that if we want to improve the transition outcomes of youth out of school, we begin by helping them achieve academically in school. By doing so, we help them stay in school until they graduate, with the later positive effects that graduation has.

Beyond this apparent admonition to begin to work toward successful transitions by helping youth succeed in school, the NLTS analyses also suggest three kinds of student characteristics that are associated with outcomes at the secondary school stage of transition: student demographics, disability-related factors, and students behaviors or experiences. Understanding the relationships between these students characteristics and secondary school outcomes may help educators and other service providers target their efforts to youth who are most at risk of transition failures. Table 6 indicates the associations between selected individual characteristics and receipt of failing grades in school; Table 7 reports associations between similar characteristics and dropout behavior.

What Kinds of Youth Are Most Likely to Fail in School or Drop Out?

Demographic Characteristics

- Younger students were more likely to receive failing grades and drop out of school than were older students. This suggests that efforts to put youth on a trajectory toward positive transition outcomes must begin early; almost 1 in 5 NLTS dropouts were less than 17 years old in their first year out of secondary school. Many youth cannot benefit from existing transition programs that focus on the last years of secondary school because they have left school much earlier. By leaving school early, they may also miss educational experiences that could benefit them in their transition. For example, 29% of 9th graders participated in no vocational education that year; whereas only 14% of 11th and 12th graders took no vocational education;

vocational education in the upper grades is also more heavily focused on specific job training, rather than prevocational skills. By leaving school early, before this occupational training, youth miss whatever potential benefits it may give them as they enter the job market.

- Male students were generally more likely than females to receive failing grades, regardless of disability category. This is consistent with findings from High School and Beyond regarding nonhandicapped students that show males having lower grade point averages than females (CES, 1984). Because males are significantly more likely to fail, and failing students are significantly more likely to drop out of school, being make has an indirect effect on dropout behavior. However, it does not appear to have an additional direct effect on dropping out.

- Minority youth in the LESI and EMR groups received failing grades at a significantly higher rate than other youth ($p \leq .01$), controlling for selected measures of socioeconomic status, IQ, and other factors in the models. Like gender, because minority status is related to school failure, it has an indirect effect on dropping out of school. However, it does not appear to have an independent effect on dropout behavior when other factors are controlled for.

- Youth from households characterized by lower socioeconomic status were more likely than others to drop out of school.* Those from households whose heads were relatively better educated and were employed were less likely to drop out. This finding is particularly relevant in light of the fact that a larger proportion of special education students are from households that are poor, relative to nonhandicapped students. For example, 41% of special education students came from households whose head was not a high school graduate, compared to 31% of nonhandicapped students (CES, 1987). NLTS data indicate 68% of handicapped students come from households with an annual income of less than $25,000 per year, compared to 55% of nonhandicapped students. This lower socioeconomic status apparently works against youth with disabilities in their efforts to complete secondary school. It also appears that this relationships continues into the out-of-school stage of transition; youth from households with less well educated heads are significantly less likely to be engaged in productive activities than youth from other households ($p \leq .05$, Table 10).

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* Although we have found no significant direct relationship between SES and receipt of failing grades, we should not conclude that socioeconomic status has no effect on this measure. Other behavioral variables entered in the model appear to more directly measure factors for which SES variables often proxy. When we omitted from the models variables related to disciplinary problems, having been held back an earlier grade, and absenteeism from school, head of household education was significantly related to a lower likelihood of receiving failing grades. Hence, behavioral variables are apparently absorbing variation that would be attributed to SES if behavioral factors were not measured directly. Further, higher SES students are also significantly more likely to be in regular education classes for their entire educational program, which other analyses suggests is associated with a higher likelihood of receiving failing grades. The lack of control for placement in these models would then mask the potential positive effects of higher SES.

Factors Related to Youths' Abilities/Disabilities

- Among youth in the LESI group, students with an emotional disturbance were significantly more likely than youth with learning disabilities alone to receive failing grades ($p \leq .01$, Table 6). We have not found that the nature of the youth's disability has an independent direct effect on dropout behavior for this category of youth. However, functional ability does appear to relate to dropout behavior; LESI youth with higher functional abilities were less likely to drop out of school ($p \leq .05$, Table 7).

- Regarding receipt of failing grades, for most groups of youth, less severely impaired youth were more likely to receive failing grades. For example, among youth with visual impairments, youth with higher functional abilities were more likely to receive failing grades ($p \leq .05$). For youth with physical impairments, those who were reported by parents to function better in terms of self-care skills were significantly more likely to receive failing grades ($p \leq .05$). Similarly, among those with hearing impairments, youth who are hard of hearing were significantly more likely than those who are deaf to receive a failing grade ($p \leq .01$). These relationships may be due to the fact that less severely impaired youth are generally more likely to be enrolled in mainstreamed classes, for which grading standards are often stiffer than in special education placements. Or, perhaps even within a given placement, it may be that different grading policies or standards are applied to youth with varying levels of disability; i.e., perhaps teachers expect more of and, therefore, grade more stringently, youth with milder disabilities. Severity of disability does not seem to have an independent direct effect on dropout behavior.

Youths' Behaviors and Experiences

- Youth who are poorly integrated socially, as measured by membership in a school or community group, tend to do less well in school and to drop out of school. Group membership reduces the likelihood of receiving a failing grade for all groups and is significant for youth with physical impairments ($p \leq .01$, Table 6). Similarly, it reduces the likelihood of dropping out for all groups and is significant for youth in the LESI and the physically and hearing impaired groups ($p \leq .01$ and .05, Table 7). Further, better social integration appears to have beneficial effects through the out-of-school stage of transition ($p \leq .05$; Table 10). Again, alternative explanations of this finding are possible. Perhaps group membership increases the bonds between special education students, other students, and school, helping youth with disabilities to meet the expectations of the school environment, avoid receiving failing grades, and completing school. However, it is also possible that unmeasured aspects of the students explain this relationship. Students with a greater degree of confidence and competence may be more likely to take the social risks inherent in group membership; these students may also be prone to do better in school and in their out-of-school transition experiences. The absence from the model of measures of these dimensions of the youth may lead to the apparent relationship between group membership and outcomes.

- Youth who had had disciplinary problems were generally more likely to be doing poorly in school; this relationship is statistically significant for youth in the LESI group ($p \leq .01$; Table 6). There is even a stronger and more consistent relationship between disciplinary problems and dropping out of school; this relationship is significant for youth in all groups but those with visual impairments ($p \leq .001$ to .05; Table 7).

- Youth who were absent frequently from school were significantly more likely to receive failing grades and to drop out of school. Youth who didn't go to school did poorly in school; youth who didn't go to school eventually left school, independent of whether or not they were receiving failing grades. This relationship is consistent and significant for all groups for which it was tested ($p \leq .001$ or .01).

The presence of these troublesome behaviors can be considered warning signs or risk factors that, if allowed to continue, significantly increase the likelihood that the students exhibiting them will fail in school and drop out. Educators can be attentive to these behaviors. When a student exhibits them, that student can become a priority candidate for support services or intervention programs the school may have available for at-risk youth. Alternative placements that offer them more individual attention or a more supportive climate might be potentially beneficial (Wehlage, 1983). Although the analyses discussed in this paper do not reveal what programs, if any, will ameliorate the adverse behaviors, they do suggest that intervention to change them is warranted.

Beyond intervention when problem behaviors arise, the findings we have presented suggest opportunities for preventive action. For example, if social integration contributes to school outcomes, schools might increase the integration of youth by sponsoring a wide variety of cocurricular and extracurricular programs that appeal to youth with varied interests and abilities, by actively encouraging the involvement of special education students in groups that are appropriate for them, and by monitoring the experiences special education students have in those groups. Group participation might help strengthen the bonds between special education students and their peers and schools, with attendant beneficial effects on school achievement. Given that youth with disciplinary problems are at higher risk of school failure

and dropout behavior, programs that focus on conflict resolution and other social skills might help them ameliorate the behaviors the lead to disciplinary action. Our findings regarding the young age associated with school failures and dropping out, it may be important for such preventive or ameliorative programs to begin early in the youth's school career if they are to help him or her to achieve in and complete school.

Summary and Future Directions

The findings presented here suggest that the transition experiences of youth with disabilities when they leave secondary school are not always smooth; many youth experience difficulties finding employment or other productive activities. The findings also point to several leverage points in the transition process at which educators and other service providers can help youth onto a positive path into adulthood. Many of those leverage points occur when youth are still in school. By helping youth avoid failure in school, we can increase the likelihood that they finish school. Graduating from high school is associated with better transition outcomes for youth when they are out of school.

We have drawn from analyses of five transition outcomes characteristics of youth that are associated with better transition experiences. It is important to understand what kinds of youth have difficult transitions so that we know how to help. However, we acknowledge that the analyses we have done thus far using NLTS data are only a first step toward the ultimate goal of identifying programs and services that are associated with more successful transitions. In the coming months, we will be analyzing the effects on transition outcomes of such factors as enrollment in vocational education; varying levels of mainstreaming; receipt of supplemental services such as tutoring, speech therapy, or life skills training; and school policies related to graduation and minimum competency testing. Educators will be able to use our findings to look carefully at the course offerings and placements available to special education students to determine if in particular schools, those students have access to and are encouraged to participate in courses and settings that may benefit them.

Regardless of what we will find in the coming months, we recognize that the analyses of our existing data will raise as many questions as they will answer. Even if we can demonstrate, as early analyses suggest, that vocational education has positive benefits for special education students, we will still want to know, for example, what it is about vocational education that helps; what kinds of training, at what levels, in what kinds of settings?

The National Longitudinal Transition Study will continue to address these and other pertinent issues in the coming years. In one component of the project, we will be delving in greater detail into the school programs of youth with learning, speech, or emotional impairments or mild mental retardation. Educators in the schools attended by these youth will provide in depth information about the classroom experiences and performance of students in this substudy. Course taking and grades for their full secondary school career will supplement the 1-year picture we have of these students now. This information will allow us to develop a more complete picture of school program across the secondary years and a more refined understanding of what it is about school experiences that affects school achievement, school completion, and later transition outcomes.

For mildly impaired students in the out-of-school years, we will be collecting detailed information again this fall on their transition experiences to enable us to plot their continuing paths into adult life. We will look at whether more youth access adult services, find employment, gain residential independence, or engage in productive activities. Changes in wages and types of jobs held will also be tracked. The Office of Special Education Programs also has the option of asking us to collect additional information on all youth in 1990 to add a longitudinal perspective to our understanding of the transition process.

Finally, we will be branching out into new substantive areas, addressing such issues as what explains variations in the kinds of school programs and services students are provided, and why some youth achieve higher levels of social integration or independent functioning than others within the same disability category. Through these continuing analyses, we hope to provide a firm foundation of information on which to base transition programming for youth with disabilities.

Table 6: FACTORS ASSOCIATED WITH RECEIPT OF FAILING GRADES

	Disability Group				
	LESI	EMR	Physical	Hearing	Visual
Percent of youth failing	36.4	20.2	22.0	14.6	16.2
Youth Demographics					
Age	-.14***	-.15*	-.19	-.12	-.32**
Youth is male	.56***	.30	.87**	-.06	.86*
Youth is minority	.51**	.78**	.36	-.12	.12
Head of household education	-.08	-.25	-.02	.10	-.13
Youth is in a single parent household	.06	-.12	-.75*	.03	.15
Head of household is employed	-.05	.14	-.52	-.26	-.14
Youth lives in an urban area	.10	-.58	-.16	.42	.34
Youth lives in a rural area	-.05	.01	-.47	.05	-.40
Abilities/disabilities					
IQ	-.00	.02	.02	-.01	-.02
Youth's functional ability	-.07	.08	.05	.10	.14*
Has a speech disability	.16	-.24			
Has an emotional disturbance	.43**	.69			
Has sensory/physical disability		-.23			
Youth began having hearing difficulty before age 3				-.34	
Youth is deaf				-.73**	
Youth is blind					-.62
Youth's self-care ability			.30**		
Youth uses physical device			-.27		
Youth behaviors/experiences					
Number of days absent from school	.05***	.04***	.05***	.06***	.04**
Youth belongs to school/community group	-.28	-.35	-.61	-.62**	-.51
Youth has had disciplinary problems	.56**	.40	--	.38	--
Youth had a job in the past year	-.15	-.73**	-.10	.03	-.17
Youth was held back 1 or more grades	.07	.10	.78*	.17	.53
Number of classes for which grades were received	.20***	.08	.49***	.38***	.34**
N	1109	559	341	773	322
X^2	214.2	103.7	91.6	119.1	56.6
d.f.	18	19	17	18	16
p<	.001	.001	.001	.001	.001

*=p≤.05; **=p≤.01; ***=p≤.001; --=Too few cases to include in the model.

Table 7: FACTORS AFFECTING DROPOUT BEHAVIOR OF YOUTH WITH DISABILITIES

Independent Variables	Disability Group				
	LESI	EMR/TMR	Physical	Hearing	Visual
Youth Background					
Age	-1.04***	-.48*	-.59**	-.71***	-1.09***
Sex (1 = male)	.54	-1.61*	.11	-.49	.77
Minority (1 = minority)	-.04	-1.05	-.35	-.38	-.22
Head of household education	-.25	-.12	-.60*	-.67**	.20
Single parent family	.25	.88	-.41	-.37	-.14
Head of household is employed	-.50	.18	-1.02	-1.45**	-1.66
Urban area	.18	.91	-.79	1.00*	-.28
Rural area	.63	.12	-.63	1.12	.43
Abilities/Disabilities					
IQ	.00	-.02	.00	.02	-.05*
Functional ability scale	-.30*	-.11	-.17	-.23	-.07
Has a speech disability	.14	-.49			
Has an emotional disability	.09	.72			
Youth is deaf				-.15	
Has any sensory or physical disability		.13			
Uses physical aid device			-1.27		
Self-care ability scale			-.22		
Age of onset of disability				-.27	
Youths' Behaviors/Experiences					
Exhibits negative behavior	1.11*	2.22**	2.29**	2.45***	--
Belongs to group	-1.92**	-.21	-2.06*	-1.18*	-.99
Absenteeism from school	.04**	.06**			
Youth had failing grade in most recent year	2.11***	2.74**			
N	348	203	181	358	163
Proportion dropped out	.18	.15	.16	.11	.10
Chi square	151.2	75.9	55.7	74.5	27.5
(df)	(18)	(19)	(14)	(14)	(11)
p	.001	.001	.001	.001	.004
R	.59	.47	.42	.44	.22

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 8: FACTORS AFFECTING POSTSECONDARY EDUCATION PARTICIPATION OF OUT-OF-SCHOOL NONINSTITUTIONALIZED YOUTH WITH DISABILITIES

	Disability Group			
	LESI	Physical	Hearing	Visual
Intercept	-8.27***	-11.29**	-8.53**	-1.85
Background Characteristics				
Youth's age	0.15	0.13	0.15	-0.13
Youth is male	0.01	-0.24	-0.21	0.23
Youth is a minority	0.13	0.11	-0.04	0.39
Head of household education	0.26**	0.40**	0.27**	0.34*
Head of household is employed	0.30	-0.02	0.11	-0.17
One-parent household	-0.13	-0.10	0.18	-0.02
Urban residence	0.34	-0.01	0.03	-0.54
Rural residence	-0.12	-0.93	-0.36	-0.96
1987 county unemployment rate	-0.01	-0.01	0.01	-0.04
Abilities and Disabilities				
IQ	0.00	0.00	0.01	0.01
Functional ability scale	0.15*	0.30*	0.11	-0.02
Speech is primary disability	0.32	0.13	-	-
ED is primary disability	-0.16	-0.03	-	-
Youth is a deaf	-	-	0.55*	-
Achievement and Behavior				
Youth is high school graduate	0.71**	1.10*	0.81**	1.42**
Youth has disciplinary problems	-0.13	-0.99	-1.13*	-1.31
Youth belongs to group	0.41*	0.31	0.23	0.87*
Left high school > 12 mos. ago	0.15	0.93*	0.86**	2.26***
N	757	232	448	187
% Participating in postsecondary education	.22	.28	.35	.33
Chi-Square	71.90	49.83	59.96	59.29
(df)	(17)	(17)	(16)	(15)

*=p≤.05; **=p≤.01; ***=p≤.001

Table 9: FACTORS AFFECTING CURRENT EMPLOYMENT OF OUT-OF-SCHOOL YOUTH AGE 16 OR OLDER

	Disability Group				
	LESI	EMR	Physical	Hearing	Visual
Percent of youth currently employed	60.4	26.3	23.5	40.0	25.9
Youth Demographics					
Age	.04	-.01	-.18	-.16	-.33
Youth is male	.95***	.82**	.51	.82***	1.06*
Youth is minority	-.34	-.45	.06	-.06	.07
Head of household education	.04	.18	-.04	.34***	.27
Youth is in a single parent household	-.02	-.74*	-.10	-.72**	-.65
Head of household is employed	.73***	-.16	-.44	-.14	.69
Youth lives in an urban area	-.58**	.22	-.28	-.29	-.79
Youth lives in a rural area	-.01	-.18	-.05	-.86*	.12
County unemployment rate	-.07**	-.02	.02	-.04	.01
Abilities/disabilities					
IQ	.01	.04*	.01	-.01	-.01
Youth's functional ability	18***	.25***	.16	.10	.15(+)
Speech is primary disability	-.14				
Speech is secondary disability	-.15				
Emotional disturbance is primary dis.	-.49*				
Any speech disability		-.94*			
Has emotional disturbance		.38			
Has sensory/physical disability		-1.97***			
Onset before age 3				-.75*	
Youth is deaf				-.27	
Youth is blind					-.31
Youth's self-care ability			.18		
Youth uses physical aide device			-1.23**		
Youth behaviors/experiences					
Youth has had disciplinary problems	-.32	.57	-.41	.61	-1.06
Youth belongs to school/community group	.03	.54	.33	.19	-.08
Youth is out of school >1 year	.11	.25	1.00	2.04**	.03
Youth is high school grad/out of school ≤1 year	.27	.32	1.16	2.06**	.11
Youth is high school grad/out of school >1 year	.41	.75(+)	-.26	.76*	.80
Youth has enrolled in postsecondary education/training in past year	.12	-1.64	.30	-.72**	.03
N	752	379	213	426	162
X^2	137.4	119.2	43.6	93.1	33.3
p≤	.001	.001	.001	.001	.02
d.f.	19	20	19	19	18

Table 10: FACTORS AFFECTING ENGAGEMENT IN PRODUCTIVE ACTIVITY IN PAST YEAR

Youth Demographics	Coefficients
Age	.04
Youth is male	.42*
Youth is minority	-.32
Head of household education	.50***
Youth is in a single parent household	-.49*
Head of household is employed	.09
Youth lives in an urban area	.04
Youth lives in a rural area	-.23
Unemployment rate in the county	-.01
Abilities/disabilities	
IQ	.00
Youth's functional ability	.12**
Youth has mild/moderate mental retardation	-.71(+)
Youth has orthopedic or health impairment	-1.26***
Youth is hard of hearing or deaf	.25
Youth has a visual impairment	.51
Youth behaviors/experiences	
Youth has had disciplinary problems	.72*
Youth belongs to school/community group	.60*
Youth is a high school grad	.85***
N	640
% engaged in productive activity	73.0
X^2 for model	159.0
p<	.001
d.f.	18

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APPENDIX

Overview of the National Transition Study

Definition of independent variables used in the multivariate analyses.

Appendix

OVERVIEW OF THE NATIONAL LONGITUDINAL TRANSITION STUDY OF SPECIAL EDUCATION STUDENTS

As part of the 1983 amendments to the Education of All Handicapped Children Act (EHA), the Congress requested that the U.S. Department of Education conduct a national longitudinal study of the transition of secondary special education students to determine how they fare in terms of education, employment, and independent living. A 5-year study was mandated, which was to include youth from ages 13 to 21 who were in special education at the time they were selected and who represented all 11 federal disability categories.

In 1984, the Office of Special Education Programs (OSEP) of the U.S. Department of Education contracted with SRI International to determine a design, develop and field test data collection instruments, and select a sample for the National Transition Study. In April 1987, under a separate contract, SRI began the actual study.

Study Components

The National Transition Study has four major components:

- *The Parent/Youth Survey*. In the first year of the study, parents were interviewed by telephone to determine information on family background and expectations for the youth in the sample, characteristics of the youth, experiences with special services, the youth's educational attainment (including postsecondary education), employment experiences, and measures of social integration. This survey is expected to be repeated in 1989, when the youth will be interviewed if he/she is able to respond.

- *School Record Abstracts*. Information has been abstracted from the school records of sample youth for the previous year or for the last year they were in secondary school (either the 1985-86 or 1986-87 school years). Information abstracted from school records relates to courses taken, grades achieved (if in a graded program), placement, related services received from the school, status at the end of the year, attendance, IQ, and experiences with minimum competency testing. Records will be abstracted again in 1989 for youth still in secondary school in the 1988-89 school year.

- *School Program Survey*. Schools attended by sample youth in the 1986-87 school year were surveyed for information on student enrollment, staffing, programs and related services offered secondary special education students, policies affecting special education programs and students, and community resources for the disabled.

- *Explanatory Substudies*. More in-depth studies involving subsamples of the main sample will examine the pattern of transition outcomes achieved by youth who are out of secondary school and the relationship between school experiences and transition outcomes.

Sampling

Youth were selected for the sample through a two-stage sampling procedure. A sample of 450 school districts was randomly selected from the universe of approximately 14,000 school districts serving secondary (grade 7 or above) special education students, which had been stratified by region of the country, a measure of district wealth involving the proportion of students in poverty (Orshansky percentile), and district size (student enrollment).* Because of a low rate of agreement to participate from these districts, a replacement sample of 176 additional districts was selected. In addition, participation in the study was invited from the approximately 80 special schools serving secondary-age deaf, blind, and deaf-blind students. A total of approximately 300 school districts and 25 special schools agreed to have youth selected for the study.

Analysis of the potential bias of the district sample indicates no systematic bias that is likely to have an impact on study results when responding districts were compared to nonrespondents on the types of disabilities served, special education enrollment, participations in Vocational Rehabilitations agency programs, the extent of school-based resources for special education, community resources for the disabled, the configuration of other education agencies serving district students, metropolitan status, percent minority enrollment, grades served, and the age limit for service (see Javitz, 1987 for more information on the LEA bias analysis).

The sample of students was selected from rosters of all special education students ages 13 to 21 who were in grades 7 through 12 or whose birthdays were in 1972 or before. The roster of such students was stratified into 3 age groups (13 to 15, 16 to 18, over 18) for each of the 11 federal handicap categories and youth were randomly selected from each age/condition group so that at least 1,000 students would be selected in each handicap category (with the exception of deaf-blind, a low-incidence condition).

Exhibit A-1 indicates the number of youth sampled in each condition, the proportion for which different combinations of data were obtained, and the reasons for nonresponse for youth for whom data could not be obtained. A study of potential nonresponse bias is now being conducted to determine the representativeness of the youth sample.

Weighting Procedures and Population to Which Data Generalize

Youth with disabilities for whom data could be gathered were weighted to represent the U.S. population of such youth. In performing this weighting, three mutually exclusive groups of sample members were distinguished:

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* The 1983 Quality Education Data, Inc. (QED) database was used to construct the sampling frame. QED is a private nonprofit firm located in Denver, Colorado.

Exhibit A-1

Student Sample by Handicapping Condition

Status	LD	SED	MR	Speech	Ortho	Deaf	H of H	Blind	D/B	Health	Multi	Total
Number of contacts	1650	1321	1642	933	1060	1050	1372	1318	165	1005	1132	12648
No Further Contact Possible												
Unable to locate	59	59	84	50	49	41	70	63	5	33	45	558
Names not provided by LEA	206	271	55	92	18	99	197	120	0	362	212	1632
Deceased	2	0	4	0	11	0	3	2	3	5	2	32
Language barrier/non-Spanish	5	4	5	9	6	12	13	3	0	5	2	64
No respondent exists	23	21	29	18	9	20	11	20	2	9	16	177
Other	3	3	7	5	1	14	6	2	3	5	6	55
Nonworking number	233	178	341	157	146	149	180	193	29	115	94	1815
TOTAL	531	536	524	331	240	335	480	403	42	534	377	4333
(Percentage of total contacts)	32	41	32	35	23	32	35	31	25	53	33	34
Responses												
Completed interview-have consent form	506	326	533	232	388	402	470	475	73	246	362	4013
Completed interview-no consent form	385	258	314	217	216	259	231	255	35	131	159	2460
Total completed interviews	891	584	847	449	604	661	701	730	108	377	521	6473
(% of total contacts)	54	44	52	48	57	63	51	55	65	38	46	51
(% of those to be interviewed)	64	59	57	57	62	73	64	64	69	62	60	62
Have partial data (other sources)	37	43	42	18	35	15	15	20	2	11	24	262
Have partial interview (phone)	39	25	27	25	16	26	17	17	4	19	22	237
Have partial interview (mail)	20	21	49	15	25	23	17	20	4	10	30	234
Total participation	987	673	965	507	680	725	750	787	119	417	597	7206
(% of total contacts)	60	51	59	54	64	69	55	60	72	41	53	57
(% of those to be interviewed)	71	68	64	64	69	80	69	69	75	69	68	69
Refused interview	56	41	40	11	30	19	24	22	3	18	18	282
Refused in earlier contacts	11	3	6	2	20	0	1	3	1	3	9	59
Total refusals	67	44	46	13	50	19	25	25	4	21	27	341
(% of total contacts)	4	3	3	1	5	2	2	2	2	2	2	3
(% of those to be interviewed)	5	4	3	2	5	2	2	2	3	3	3	3
Other	29	20	19	22	8	14	18	18	4	14	22	238

A. Youth whose parents responded to the telephone-administered Parent Interview.

B. Youth whose parents did not respond to the telephone-administered Parent Interview, but were interviewed in the in-person nonrespondent study.

C. Youth whose parents did not respond to either the telephone or in-person Parent Interview, but for whom the school provided a record abstract.

All sample members belong to one of these three groups.

A primary concern in performing the weighting was to determine whether there was a nonresponse bias and to calculate the weights in such a way as to minimize that bias. Nonresponse bias was primarily of three types:*

1. Bias attributable to the inability to locate respondents because they had moved or had nonworking telephone numbers.

2. Bias attributable to refusal to complete a parent interview.

3. Bias attributable to circumstances that made it infeasible for the record abstractors to locate or process a student's record.

Of these three types of nonresponse, the first was believed to be the most important, both in terms of frequency and influence on the descriptive and explanatory analysis. Type 1 bias was also the only type of nonresponse that we could estimate and correct.

We estimated the magnitude of type 1 nonresponse bias by comparing responses on identical (or very similar) items in the three groups of respondents (after adjusting for differences in the frequency with which different handicaps were selected and differences in the size of the LEAs selected). Group A respondents were wealthier, more highly educated, and more likely to be Caucasian than group B respondents. In addition, group A respondents were much more likely to have youth who graduate from high school than group B or C respondents (who had similar dropout rates). On all other measurable items, the youth described by the three groups were similar, including sex, employment status, pay, self-care skills scale, household-care activities scale, functional mental skills scale, association with a social group, and length of time since leaving school. SRI determined that

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* In addition, there was a large group of nonrespondents who could not be located because their LEAs would not provide student names. Presumably, had these student names been available, many of those nonrespondents would have chosen to participate at about the same rate as parents in districts in which youth could be identified. The remaining nonrespondents would presumably have been distributed between the three types of nonresponse mentioned above.

adjusting the weights to eliminate bias in the income distribution would effectively eliminate bias in parental educational attainment and racial composition, but would have a negligible effect on dropout rates. It was also determined that group B and C respondents were present in sufficient numbers that if they were treated as no different from the group A respondents in the weighting process, the resultant dropout distribution would be approximately correct.

Weighting was accomplished using the following sequence of steps:

(1) Data from all three groups were used to estimate the income distribution for each handicapping condition that would have been obtained in the absence of type 1 nonresponse bias.

(2) Respondents from all three groups were combined and weighted up to the universe by handicapping condition. Weights were computed within strata used to select the sample (i.e., LEA size and wealth, and student age).

(3) Weights from four rare handicapping conditions (deaf/blind, deaf, orthopedically impaired, and visually impaired) were adjusted to increase the effective sample size. These adjustments primarily consisted of slightly increasing the weights of students in larger LEAs and decreasing the weights of students in smaller LEAs. Responses before and after these weighting adjustments were nearly identical, except for the deaf/blind. The adjustment for the deaf/blind consisted of removing a single respondent from a medium-sized LEA, who was being weighted up to represent two-thirds of all deaf/blind students. Hence, survey results do not represent deaf/blind students in medium or smaller-sized LEAs.

(4) The resultant weights were adjusted so that each handicapping condition exhibited the appropriate income distribution estimated in step 1 above. These adjustments were of modest magnitude (relative to the range of weights within handicapping condition)--the weights of the poorest respondents were multiplied by a factor of approximately 1.6 and the weights of the wealthiest respondents were multiplied by a factor of approximately 0.7.

Statistical Tests

A statistical procedure was used to compute the approximate standard errors of proportions and to test the difference between two proportions. We first computed the weighted percent of "yes" respondents to a survey item and then computed the effective sample size (i.e., the sum of the weights squared, divided by the sum of the squared weights). These two quantities were then used in the usual formula for the variance of a binomially distributed variable (i.e., pq/n where p is the weighted proportion of "yes" responses, q is the complement of p, and n is the effective sample size). To test the difference of two weighted proportions, we computed the difference between the weighted proportions and divided this quantity by the square root of the sum of the variances of the two proportions.

This procedure is only approximately correct because it adjusts only for the difference in weights, but not for cluster-sampling induced covariance among respondents. We are currently in the process of using pseudo-replication to compute more accurate variance estimates. We expect that the true variances are larger than calculated by the effective sample size method, and therefore that stated significance levels (e.g., $p < .01$) will be somewhat too small. Consequently, we have tended to be very conservative, and for the most part, highlight results that are significant at the .005 level.

Analysis

The first stage of the analysis study involves producing descriptive findings related to individual and family characteristics of youth, their experiences with services, their secondary school program, and their outcomes in terms of education, employment, and independent living. Descriptive questions include the following:

- What are the individual and family characteristics of handicapped youth served under EHA?
- What educational experiences and related services are handicapped youth provided under EHA? How do these vary for youth with different handicapping conditions and of different ages? What is the content, duration, intensity, coordination, and provider of these services?
- What are the characteristics of the schools serving youth with disabilities (e.g., with respect to grade levels served, programs and staff available, policies and practices regarding students with disabilities)?
- What are the achievements of youth with disabilities related to their education (secondary school and postsecondary), employment, and independence? How do these vary for youth with different kinds of disabilities?
- What combinations of services, experiences, and outcomes form transitional life paths for youth with different kinds of disabilities?

The second analysis stage will involve multivariate analyses to determine the relationships among the variables depicted in the conceptual model. Explanatory questions include:

- What factors combine to explain the patterns of services that youth receive?
- What factors explain the educational, employment, and independence outcomes of handicapped youth?
- What explains the paths youth take through secondary school and beyond with respect to services, experiences, and outcomes?

Reporting

Findings of the study will be presented in several forms through several channels. Statistical almanacs will present all the descriptive information available from the study for the total handicapped youth population and for each individual handicapping condition. Dissemination activities will entail conference presentations, journal articles, and mailings of key findings to participants in the study and others interested in its findings. A series of special topic reports will present findings from analyses addressing specific policy or research questions. Four methodology reports will detail the sampling, data collection, and analysis procedures used for the project and the reliability/validity of findings. A final report to OSEP will provide comprehensive documentation of findings.

DEFINITION OF INDEPENDENT VARIABLES

Two kinds of independent variables help to explain variations in the outcomes we have examined: those related to the individual youth, and those related to programs, services, or school factors the youth experiences. Both types of variables are essential to the analyses so that we can answer the question: given the youth has the combination of characteristics, abilities, and disabilities he has, what kinds of schools, programs, or services will help him achieve more desirable outcomes? The independent variables are described below.

Characteristics of the Youth

Research on nondisabled youth has demonstrated the effects of several youth and family characteristics on school achievement, dropout behavior, acquisition of employment, and other outcomes. To test the effects of demographics on transition outcomes for youth with disabilities, the following variables were included in the analyses:

- The youth's age.
- The youth's gender (1=male; 0=female).
- Ethnic background (1=minority excluding Asian, 0=white or Asian).
- Socioeconomic status, measured by the educational level of the head of household (1=no high school diploma, 2=high school graduate, 3=some college education, 4=college degree or more) and whether the head of household is employed.
- Urbanicity, measured by 2 dichotomous variables indicating if the youth attends school in an urban area or a rural area. The comparison condition is attending school in a suburban area.
- The youth's IQ, as reported by his/her school.

- The youth's functional ability, measured by a scale based on parents' reports of how well youth perform 4 functional tasks on his/her own, without help: counting change, telling time on a clock with hands, reading common signs, and looking up names in the telephone book and using the telephone. Youth were scored from 1 (does the task "not at all well") to 4 (does the task "very well") on each task. Summing these scores on the 4 tasks creates a scale ranging from 4 to 16.

Although the analyses are conducted separately for youth in different disability groupings, within groups there is still considerable variation in the combination and severity of disabilities, which could affect transition outcomes. Disability characteristics also relate to the kinds of services received and, potentially, their effects. Therefore, several variables related to variations in disability within disability groupings are included in the analyses to test their direct effects on outcomes and to control for any confounding with the effects of educational programs and related services. They include the following:

- For youth in the LESI and MR groups, 2 dichotomous variables are used to designate youth with a speech impairment and those with an emotional disturbance. These variables are used so that, for example, variables related to receiving speech therapy are not absorbing variation attributable to being speech impaired. Using these dichotomous variables, the effects of different services are reported, net of the effects of having the disability most associated with that service.

- For the MR group, an additional dichotomous variable distinguishes youth with a physical or sensory disability in addition to their mental retardation. One might expect that having such a disability, in addition to the mental retardation that qualified the youth for this group, might affect the choice of a youth's educational program and/or further challenge the youth's ability to achieve desirable outcomes.

- For the physically impaired group, a dichotomous variable distinguishes youth who use a physical aid, such as a wheel chair, crutches, cane, walker, prosthetic, or orthotic, from those who do not. Physical functioning is measure using a scale based on parents' reports of how well the youth could perform 3 basic self-care tasks on his/her own, without help: dress oneself, feed oneself, and get around to places outside the home, such as a nearby park or neighbor's house. Youth were scored from 1 (does the task "not at all well") to 4 (does the task "very well") on each task. Summing these scores on the tasks creates a scale ranging from 3 to 12.

- For the hearing impaired group, a dichotomous variable distinguishes youth who are categorized by their school or district as deaf from those who are labeled hard of hearing. A second dichotomous variable distinguishes youth who are reported by parents as having trouble with their disability before the age of three from those who began having trouble at a later age. This variable controls primarily for the effects of variations in speech acquisition.

- For the visually impaired group, a dichotomous variable distinguishes youth who are categorized by their school or district as blind from those who are labeled partially sighted.

In addition to their demographic and disability-related characteristics, youth exhibit particular behaviors and have some experiences that are expected either to influence their school achievement directly, or to be confounded with the nature of their school program, requiring that they be controlled in the analysis to identify the independent effects of those programs on outcomes. These variables include:

- Whether the youth has had disciplinary problems. A dichotomous variable distinguishes youth who have had one or more of a specific set of disciplinary problems from those who have had none of them. These disciplinary problems include: ever being fired from a job, leaving school because of suspension or expulsion, or ever being arrested or incarcerated. We hypothesize that youth who have experienced disciplinary problems are less likely to achieve positive outcomes.

- The degree of social integration of the youth is measured by a dichotomous variable indicating whether parents reported that the youth belonged to any school or community group in the past year. Youth with poor social integration, who do not belong to any such groups, are expected to be disproportionately represented among those receiving failing grades.

- Absenteeism from school is a continuous variable measuring the number of days absent from school, truncated at 60 days. High absenteeism is expected to increase the likelihood of poor outcomes in the secondary school stage; the variable is included in the school achievement and dropout models.

- Prior school achievement is included in the school achievement model and is measured by a dichotomous variable indicating if the youth is older than the typical age-for-grade, suggesting that he/she had repeated an earlier grade. We except youth who have repeated an earlier grade to be more likely to fail in school in their most recent year.

- Whether the youth had a job in the past year is included in the school achievement model and is measured by a dichotomous variable distinguishing youth who had a workstudy job (either paid or unpaid), or other work for pay (whether sheltered or competitive) in the past year from youth who had neither kind of job. Research is mixed on the effects of employment on school achievement (Greenberger and Steinberg, 1986) and the direction of its effect in this analysis is not hypothesized.

- For models relating to postsecondary education participation, employment, and engagement in productive activities, a dichotomous variable measures whether the youth is a high school graduate. High school graduation is hypothesized to increase the likelihood of achieving positive outcomes.

- In the model relating to employment, a dichotomous variable indicates whether the youth participates in postsecondary education; such educational pursuits are expected to decrease the likelihood the youth with also be employed.